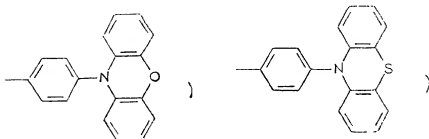
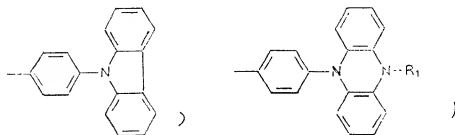
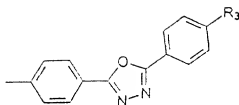


# Claims

1. A polyfluorene end-capped with at least one charge-transporting moiety.
2. A polyfluorene according to claim 1, wherein the charge-transporting moiety is selected from the group comprising electron-transporting moieties, hole-transporting moieties and ion-transporting moieties.
3. A polyfluorene according to any of claims 1 - 2, wherein the charge-transporting moiety is selected from the group comprising :

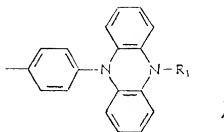
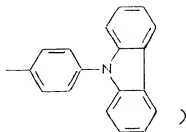
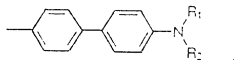
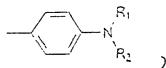


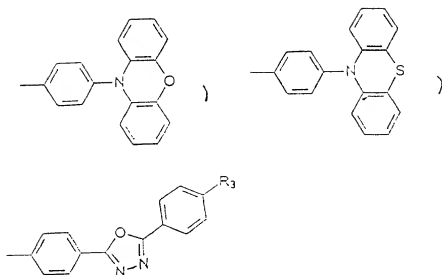


wherein  $R_1$  and  $R_2$  are independently at each occurrence selected from the group comprising straight chain  $C_{1-20}$  alkyl, branched  $C_{1-20}$  alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, alkoxyaryl, substituted alkoxyaryl, aryloxyaryl, substituted aryloxyaryl, dialkylaminoaryl, substituted dialkylaminoaryl, diarylaminoaryl and substituted diarylaminoaryl, and

wherein  $R_3$  is independently at each occurrence selected from the group comprising straight chain  $C_{1-20}$  alkyl, branched  $C_{1-20}$  alkyl, aryl, substituted aryl, alkylaryl and substituted alkylaryl.

4. A polyfluorene according to claim 3, wherein  $R_1$  and  $R_2$  are independently at each occurrence selected from the group comprising 4-methylphenyl, 2-methylphenyl, phenyl, 1-naphthyl, 2-naphthyl, 4-methoxyphenyl, 2-methoxyphenyl, 4-dimethylaminophenyl, 2-dimethylaminophenyl, 4-diphenylaminophenyl and 4-phenoxyphenyl.
5. A polyfluorene end-capped with at least one moiety selected from the group comprising

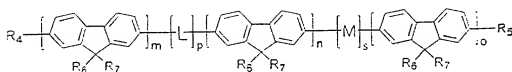




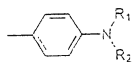
wherein  $R_1$  and  $R_2$  are independently at each occurrence selected from the group comprising straight chain  $C_{1-20}$  alkyl, branched  $C_{1-20}$  alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, alkoxyaryl, substituted alkoxyaryl, aryloxyaryl, substituted aryloxyaryl, dialkylaminoaryl, substituted dialkylaminoaryl, diarylaminoaryl and substituted diarylaminoaryl, and

wherein  $R_3$  is independently at each occurrence selected from the group comprising straight chain  $C_{1-20}$  alkyl, branched  $C_{1-20}$  alkyl, aryl, substituted aryl, alkylaryl and substituted alkylaryl.

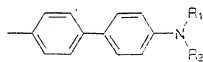
6. A polyfluorene according to claim 5, wherein  $R_1$  and  $R_2$  are independently at each occurrence selected from the group comprising 4-methylphenyl, 2-methylphenyl, phenyl, 1-naphthyl, 2-naphthyl, 4-methoxyphenyl, 2-methoxyphenyl, 4-dimethylaminophenyl, 2-dimethylaminophenyl, 4-diphenylaminophenyl and 4-phenoxyphenyl.
7. A polyfluorene having the formula



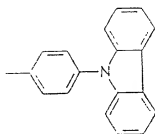
wherein  $R_4$  and  $R_5$  are independently at each occurrence selected from the group comprising:



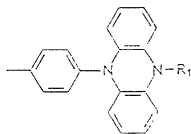
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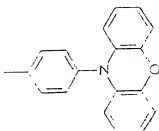
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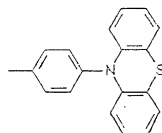
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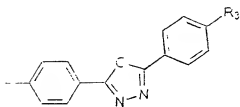
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)

and H

R<sub>1</sub> and R<sub>2</sub> being independently selected from the group comprising straight chain C<sub>1-20</sub> alkyl, branched C<sub>1-20</sub> alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl, alkoxyaryl, substituted alkoxyaryl, aryloxyaryl, substituted aryloxyaryl, dialkylaminoaryl, substituted dialkylaminoaryl, diarylaminoaryl and substituted diarylaminoaryl,

R<sub>3</sub> being selected from the group comprising straight chain C<sub>1-20</sub> alkyl, branched C<sub>1-20</sub> alkyl, aryl, substituted aryl, alkylaryl and substituted alkylaryl,

and wherein R<sub>6</sub> and R<sub>7</sub> are independently at each occurrence selected from the group comprising straight chain C<sub>1-20</sub> alkyl, branched chain C<sub>1-20</sub> alkyl, aryl, substituted aryl, alkylaryl, substituted alkylaryl,  $-(CH_2)_q-(O-CH_2-CH_2)_r-O-CH_3$ ,

q being selected from the range  $1 \leq q \leq 10$ , r being selected from the range  $0 \leq r \leq 20$ ,

and wherein L and M are independently at each occurrence selected from the group comprising thiophene, substituted thiophene, phenyl, substituted phenyl, phenanthrene, substituted phenanthrene, anthracene, substituted anthracene, any aromatic monomer that can be synthesized as a dibromo-substituted monomer, benzothiadiazole, substituted benzothiadiazole, perylene and substituted perylene,

and wherein  $m+n+o \geq 10$ , each of m, n, o being independently selected from the range 1 - 1,000,

and wherein p is selected from the range 0 - 15,

and wherein s is selected from the range 0 - 15,

with the proviso that, if R<sub>4</sub> is H, R<sub>5</sub> is not H, and if R<sub>5</sub> is H, R<sub>4</sub> is not H.

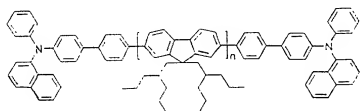
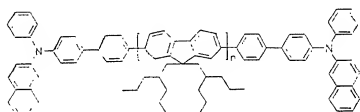
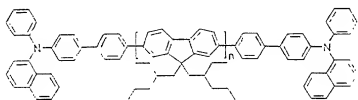
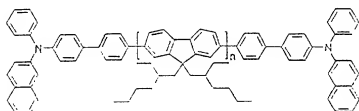
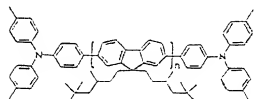
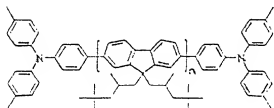
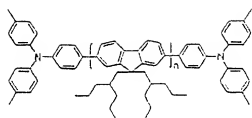
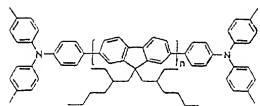
8. A polyfluorene according to claim 7,

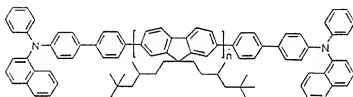
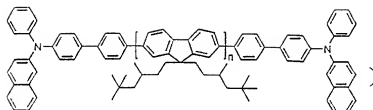
wherein m, p, s, o are 0, and

wherein  $R_4 - R_7$  and  $R_1 - R_3$  are as previously defined.

9. A polyfluorene according to any of the foregoing claims cross-linked to a polyfluorene according to any of the foregoing claims via at least one linkage selected from the group comprising a 9,9-spirobifluorene-linkage, a bifluorenyl-linkage, a bifluorenylidene-linkage and an  $\alpha,\omega$ -difluorenylalkane-linkage with a length of the alkane spacer in the range from 1 - 20 C-atoms.
10. A polyfluorene according to any of the foregoing claims which has at least one color-tuning moiety incorporated into the main chain.
11. A polyfluorene according to claim 10, wherein the color-tuning moiety is selected from the group comprising thiophene, substituted thiophene, phenyl, substituted phenyl, phenanthrene, substituted phenanthrene, anthracene, substituted anthracene, any aromatic monomer that can be synthesized as a dibromo-substituted monomer, benzothiadiazole, substituted benzothiadiazole, perylene and substituted perylene.
12. A polyfluorene according to any of the foregoing claims, which is liquid-crystalline.
13. A polyfluorene according to claim 12, which is liquid-crystalline at or above 70°C.
14. A polyfluorene according to any of claims 1 - 11, which is amorphous.
15. A polyfluorene selected from the group comprising

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wherein n is as previously defined.

16. A film incorporating a polyfluorene according to any of the foregoing claims.
17. A film according to claim 16 which is aligned.
18. A film according to any of claims 16 - 17, incorporating at least one other substance.
19. A film according to claim 18, in which said other substance is selected from the group comprising fluorescent dyes, hole-transporting moieties, electron-transporting moieties, ion-transporting moieties, phosphorescent dyes, nanoparticles, low molecular weight liquid-crystalline moieties, other liquid-crystalline and/or fluorescent and/or phosphorescent and/or charge-transporting polymers.
20. A film according to any of the claims 16 - 19, deposited on an alignment layer.
21. A film according to any of the claims 16 - 20 having a thickness ranging from 10 nm to 2  $\mu\text{m}$ .
22. A device selected from the group comprising FETs, photovoltaic elements, LEDs and sensors, incorporating a polyfluorene according to any of claims 1 - 15.
23. A device according to claim 22 incorporating another polymer.



24. A device according to claim 23 wherein said polymer is a luminescent polymer.
25. A device selected from the group comprising FETs, photovoltaic elements, LEDs and sensors, incorporating a film according to any of claims 16 - 21.
26. Use of a polyfluorene according to any of claims 1 - 15 in a film.
27. Use according to claim 24, wherein the film is an emission layer.
28. Use of a polyfluorene according to any of claims 1 - 15 in a device selected from the group comprising FETs, photovoltaic elements, LEDs and sensors.
29. Use of a film according to any of claims 16 - 21 in a device selected from the group comprising FETs, photovoltaic elements, LEDs, and sensors.
30. Use of a device according to any of claims 22 - 25 in combination with a liquid-crystal display (LCD).

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